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<110> Horvitz, H. Robert
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Shaham, Shai

<120> Cloning, Sequencing and Characterization of Two Cell Death Genes and Uses Therefor

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<150> US 07/979,638
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72

B

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73

B

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77

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gtttgtgtct cgaacgcata ataatttaa taactcgttt tgaatttgat tagttgttgt 7320
gcccagtata tatgtatgta ctatgcttct atcaacaaaa tagtttcata gatcatcacc 7380

B4 Cont

78

B

ccaaccccac caacctaccg taccatattc atttttgccg ggaatcaatt tcgattaatt 7440
ttaacctatt ttttcgccac aaaaaatcta atatttgaat taacgaatag cattcccatc 7500
tctcccgtgc cggaatgcct cccggccttt taaagttcgg aacatttggc aattatgtat 7560
aaatttgtag gtccccccca tcatttcccg cccatcatct caaattgcat tctttttttcg 7620
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<210> 19
<211> 503
<212> PRT
<213> Caenorhabditis elegans

<400> 19

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Met Met Arg Gln Asp Arg Arg Ser Leu Leu Glu Arg Asn Ile Met Met
 1               5                  10                  15
Phe Ser Ser His Leu Lys Val Asp Glu Ile Leu Glu Val Leu Ile Ala
            20                  25                  30
Lys Gln Val Leu Asn Ser Asp Asn Gly Asp Met Ile Asn Ser Cys Gly
        35                  40                  45
Thr Val Arg Glu Lys Arg Arg Glu Ile Val Lys Ala Val Gln Arg Arg
    50                  55                  60
Gly Asp Val Ala Phe Asp Ala Phe Tyr Asp Ala Leu Arg Ser Thr Gly
65                  70                  75                  80
His Glu Gly Leu Ala Glu Val Leu Glu Pro Leu Ala Arg Ser Val Asp
                85                  90                  95
Ser Asn Ala Val Glu Phe Glu Cys Pro Met Ser Pro Ala Ser His Arg
            100                 105                 110
Arg Ser Arg Ala Leu Ser Pro Ala Gly Tyr Thr Ser Pro Thr Arg Val
        115                 120                 125
His Arg Asp Ser Val Ser Ser Val Ser Ser Phe Thr Ser Tyr Gln Asp
    130                 135                 140
Ile Tyr Ser Arg Ala Arg Ser Arg Ser Arg Ser Arg Ala Leu His Ser
145                 150                 155                 160
Ser Asp Arg His Asn Tyr Ser Ser Pro Pro Val Asn Ala Phe Pro Ser
                165                 170                 175
Gln Pro Ser Ser Ala Asn Ser Ser Phe Thr Gly Cys Ser Ser Leu Gly
            180                 185                 190
Tyr Ser Ser Ser Arg Asn Arg Ser Phe Ser Lys Ala Ser Gly Pro Thr
        195                 200                 205
Gln Tyr Ile Phe His Glu Glu Asp Met Asn Phe Val Asp Ala Pro Thr
    210                 215                 220
Ile Ser Arg Val Phe Asp Glu Lys Thr Met Tyr Arg Asn Phe Ser Ser
225                 230                 235                 240
Pro Arg Gly Met Cys Leu Ile Ile Asn Asn Glu His Phe Glu Gln Met
                245                 250                 255
Pro Thr Arg Asn Gly Thr Lys Ala Asp Lys Asp Asn Leu Thr Asn Leu
            260                 265                 270
Phe Arg Cys Met Gly Tyr Thr Val Ile Cys Lys Asp Asn Leu Thr Gly
        275                 280                 285
Arg Gly Met Leu Leu Thr Ile Arg Asp Phe Ala Lys His Glu Ser His
    290                 295                 300
Gly Asp Ser Ala Ile Leu Val Ile Leu Ser His Gly Glu Glu Asn Val
305                 310                 315                 320
Ile Ile Gly Val Asp Asp Ile Pro Ile Ser Thr His Glu Ile Tyr Asp
                325                 330                 335
Leu Leu Asn Ala Ala Asn Ala Pro Arg Leu Ala Asn Lys Pro Lys Ile
            340                 345                 350
Val Phe Val Gln Ala Cys Arg Gly Glu Arg Arg Asp Asn Gly Phe Pro
```


79

B

```
        355                 360                 365
Val Leu Asp Ser Val Asp Gly Val Pro Ala Phe Leu Arg Arg Gly Trp
    370                 375                 380
Asp Asn Arg Asp Gly Pro Leu Phe Asn Phe Leu Gly Cys Val Arg Pro
385                 390                 395                 400
Gln Val Gln Gln Val Trp Arg Lys Lys Pro Ser Gln Ala Asp Ile Leu
                405                 410                 415
Ile Arg Tyr Ala Thr Thr Ala Gln Tyr Val Ser Trp Arg Asn Ser Ala
            420                 425                 430
Arg Gly Ser Trp Phe Ile Gln Ala Val Cys Glu Val Phe Ser Thr His
        435                 440                 445
Ala Lys Asp Met Asp Val Val Glu Leu Leu Thr Glu Val Asn Lys Lys
    450                 455                 460
Val Ala Cys Gly Phe Gln Thr Ser Gln Gly Ser Asn Ile Leu Lys Gln
465                 470                 475                 480
Met Pro Glu Met Thr Ser Arg Leu Leu Lys Lys Phe Tyr Phe Trp Pro
                485                 490                 495
Glu Ala Arg Asn Ser Ala Val
            500
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<210> 20
<211> 505
<212> PRT
<213> Caenorhabditis briggsae

<220>
<221> VARIANT
<222> 94, 95, 96, 120, 179, 318
<223> Xaa = Any Amino Acid

<400> 20

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Met Met Arg Gln Asp Arg Trp Leu Leu Glu Arg Asn Ile Leu Glu Phe
 1               5                  10                  15
Ser Ser Lys Leu Gln Ala Asp Leu Ile Leu Asp Val Leu Ile Ala Lys
            20                  25                  30
Gln Val Leu Asn Ser Asp Asn Gly Asp Val Ile Asn Ser Cys Arg Thr
        35                  40                  45
Glu Arg Asp Asn Glu Lys Glu Ile Val Lys Ala Val Gln Arg Arg Gly
    50                  55                  60
Asp Glu Ala Phe Asp Ala Phe Tyr Asp Ala Leu Arg Asp Thr Gly His
65                  70                  75                  80
Asn Asp Leu Ala Asp Val Leu Met Pro Leu Ser Arg Pro Xaa Xaa Xaa
                85                  90                  95
Asn Pro Val Pro Met Glu Cys Pro Met Ser Pro Ser Ser His Arg Arg
            100                 105                 110
Ser Arg Ala Leu Ser Pro Pro Xaa Tyr Ala Ser Pro Thr Arg Val His
        115                 120                 125
Arg Asp Ser Ile Ser Ser Val Ser Ser Phe Thr Ser Thr Tyr Gln Asp
    130                 135                 140
Val Tyr Ser Arg Ala Arg Ser Ser Ser Arg Ser Ser Arg Pro Leu Gln
145                 150                 155                 160
Ser Ser Asp Arg His Asn Tyr Met Ser Ala Ala Thr Ser Phe Pro Ser
                165                 170                 175
Gln Pro Xaa Ser Ala Asn Ser Ser Phe Thr Gly Cys Ala Ser Leu Gly
            180                 185                 190
Tyr Ser Ser Ser Arg Asn Arg Ser Phe Ser Lys Thr Ser Ala Gln Ser
        195                 200                 205
Gln Tyr Ile Phe His Glu Glu Asp Met Asn Tyr Val Asp Ala Pro Thr
```

```
    210                 215                 220
Ile His Arg Val Phe Asp Glu Lys Thr Met Tyr Arg Asn Phe Ser Ser
225                 230                 235                 240
Pro Arg Gly Leu Cys Leu Ile Ile Asn Asn Glu His Phe Glu Gln Met
                245                 250                 255
Pro Thr Arg Asn Gly Thr Lys Ala Asp Lys Asp Asn Leu Thr Asn Ile
            260                 265                 270
Phe Arg Cys Met Gly Tyr Thr Val Ile Cys Lys Asp Asn Leu Thr Gly
        275                 280                 285
Arg Glu Met Leu Ser Thr Ile Arg Ser Phe Gly Arg Asn Asp Met His
    290                 295                 300
Gly Asp Ser Ala Ile Leu Val Ile Leu Ser His Gly Glu Xaa Asn Val
305                 310                 315                 320
Ile Ile Gly Val Asp Asp Val Ser Val Asn Val His Glu Ile Tyr Asp
                325                 330                 335
Leu Leu Asn Ala Ala Asn Ala Pro Arg Leu Ala Asn Lys Pro Lys Leu
            340                 345                 350
Val Phe Val Gln Ala Cys Arg Gly Glu Arg Arg Asp Asn Gly Phe Pro
        355                 360                 365
Val Leu Asp Ser Val Asp Gly Val Pro Ser Leu Ile Arg Arg Gly Trp
    370                 375                 380
Asp Asn Arg Asp Gly Pro Leu Phe Asn Phe Leu Gly Cys Val Arg Pro
385                 390                 395                 400
Gln Val Gln Gln Val Trp Arg Lys Lys Pro Ser Gln Ala Asp Met Leu
                405                 410                 415
Ile Ala Tyr Ala Thr Thr Ala Gln Tyr Val Ser Trp Arg Asn Ser Ala
            420                 425                 430
Arg Gly Ser Trp Phe Ile Gln Ala Val Cys Glu Val Phe Ser Leu His
        435                 440                 445
Ala Lys Asp Met Asp Val Val Glu Leu Leu Thr Glu Val Asn Lys Lys
    450                 455                 460
Val Ala Cys Gly Phe Gln Thr Ser Gln Gly Ser Asn Ile Leu Lys Gln
465                 470                 475                 480
Met Pro Glu Leu Thr Ser Arg Leu Leu Lys Lys Phe Tyr Phe Trp Pro
                485                 490                 495
Glu Asp Arg Gly Arg Asn Ser Ala Val
            500                 505
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<210> 21
<211> 479
<212> PRT
<213> Caenorhabditis vulgaris

<220>
<221> VARIANT
<222> 310
<223> Xaa = Any Amino Acid

<400> 21

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 1               5                  10                  15
Asn Gly Asp Met Ile Asn Ser Cys Gly Thr Val Arg Glu Lys Arg Arg
            20                  25                  30
Glu Ile Val Lys Ala Val Gln Arg Arg Gly Asp Val Ala Phe Asp Ala
        35                  40                  45
Phe Tyr Asp Ala Leu Arg Ser Thr Gly His Glu Gly Leu Ala Glu Val
    50                  55                  60
Leu Glu Pro Leu Ala Arg Ser Val Asp Ser Asn Ala Val Glu Phe Glu
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```
65                  70                  75                  80
Cys Pro Met Ser Pro Ala Ser His Arg Arg Ser Arg Ala Leu Ser Pro
                85                  90                  95
Ala Gly Tyr Thr Ser Pro Thr Arg Val His Arg Asp Ser Val Ser Ser
            100                 105                 110
Val Ser Ser Phe Thr Ser Tyr Gln Asp Ile Tyr Ser Arg Ser Thr Ser
        115                 120                 125
Ser Ser Ser Arg Pro Leu His Thr Ser Asp Arg His Asn Tyr Val Ser
    130                 135                 140
Pro Ser Asn Ser Phe Gln Ser Gln Pro Ala Ser Ala Asn Ser Ser Phe
145                 150                 155                 160
Thr Gly Ser Ser Ser Leu Gly Tyr Ser Ser Ser Arg Thr Arg Ser Tyr
                165                 170                 175
Ser Lys Ala Ser Ala His Ser Gln Tyr Ile His Glu Glu Asp Met Asn
            180                 185                 190
Tyr Val Asp Ala Pro Thr Ile His Arg Val Phe Asp Glu Lys Thr Met
        195                 200                 205
Tyr Arg Asn Phe Ser Thr Pro Arg Gly Leu Cys Leu Ile Ile Asn Asn
    210                 215                 220
Glu His Phe Glu Gln Met Pro Thr Arg Asn Gly Thr Lys Pro Asp Lys
225                 230                 235                 240
Asp Asn Ile Ser Asn Leu Phe Arg Cys Met Gly Tyr Ile Val His Cys
                245                 250                 255
Lys Asp Asn Leu Thr Gly Arg Gly Met Met Leu Thr Ile Arg Asp Phe
            260                 265                 270
Ala Lys Asn Glu Thr His Gly Asp Ser Ala Ile Leu Val Ile Leu Ser
        275                 280                 285
His Gly Glu Glu Asn Val Ile Ile Gly Val Asp Asp Val Ser Val Asn
    290                 295                 300
Val His Glu Ile Tyr Xaa Leu Leu Asn Ala Ala Asn Ala Pro Arg Leu
305                 310                 315                 320
Ala Asn Lys Pro Lys Leu Val Phe Val Gln Ala Cys Arg Gly Glu Arg
                325                 330                 335
Arg Asp Val Gly Phe Pro Val Leu Asp Ser Val Asp Gly Val Pro Ala
            340                 345                 350
Leu Ile Arg Arg Gly Trp Asp Lys Gly Asp Gly Pro Leu Phe Asn Phe
        355                 360                 365
Leu Gly Cys Val Arg Pro Gln Ala Gln Gln Val Trp Arg Lys Lys Pro
    370                 375                 380
Ser Gln Ala Asp Ile Leu Ile Ala Tyr Ala Thr Thr Ala Gln Tyr Val
385                 390                 395                 400
Ser Trp Arg Asn Ser Ala Arg Gly Ser Trp Phe Ile Gln Ala Val Cys
                405                 410                 415
Glu Val Phe Ser Leu His Ala Lys Asp Met Asp Val Val Glu Leu Leu
            420                 425                 430
Thr Glu Val Asn Lys Lys Val Ala Cys Gly Phe Gln Thr Ser Gln Gly
        435                 440                 445
Ala Asn Ile Leu Lys Gln Met Pro Glu Leu Thr Ser Arg Leu Leu Lys
    450                 455                 460
Lys Phe Tyr Phe Trp Pro Glu Asp Arg Asn Arg Ser Ser Ala Val
465                 470                 475
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<210> 22
<211> 17
<212> DNA
<213> Caenorhabditis elegans

<400> 22

82

B

attggcgatc ctctcga 17

<210> 23
<211> 17
<212> DNA
<213> Caenorhabditis elegans

<400> 23
attggcgatc ctctcga 17

<210> 24
<211> 30
<212> DNA
<213> Caenorhabditis elegans

<400> 24
tcatcgactt ttagatgact agagaacatc 30

<210> 25
<211> 30
<212> DNA
<213> Caenorhabditis elegans

<400> 25
gttgcactgc tttcacgatc tcccgtctct 30

<210> 26
<211> 21
<212> DNA
<213> Caenorhabditis elegans

<400> 26
gtttaattac ccaagtttga g 21

<210> 27
<211> 21
<212> DNA
<213> Caenorhabditis elegans

<400> 27
ggttttaacc agttactcaa g 21

<210> 28
<211> 19
<212> DNA
<213> Caenorhabditis elegans

<400> 28
ccggtgacat tggacactc 19

<210> 29
<211> 15
<212> DNA
<213> Caenorhabditis elegans

<400> 29
actattcaac acttg 15

<210> 30

83

B

<211> 12
<212> PRT
<213> Caenorhabditis elegans

<400> 30
Tyr Asn Asn Gln Ser His Leu Ala Asp Phe Leu Glu
1 5 10

<210> 31
<211> 12
<212> PRT
<213> Caenorhabiditis elegans

<400> 31
Ser Leu Glu Ile Asp Glu Cys Tyr Asp Phe Leu Glu
1 5 10

84

B